

**INSULATING LAYER HAVING DECREASED DIELECTRIC  
CONSTANT AND INCREASED HARDNESS**

**ABSTRACT**

**[0038]** A method of manufacturing a mechanically robust insulating layer, including forming a low-k dielectric layer having a first dielectric constant on a substrate and forming a carbon nitride cap layer on the low-k dielectric layer, the insulating layer thereby having a second dielectric constant that is less than the first dielectric constant.